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| 10/709,506 | 05/11/2004 | Liang-Chen Chien | VASP0004USA | 3505 |
| 27765 | 7590 | 07/03/2007 | | |
| NORTH AMERICA INTELLECTUAL PROPERTY CORPORATION . | | | EXAMINER | |
| P.O. BOX 506 | | | PIZIALI, JEFFREY J | |
| MERRIFIELD, VA 22116 | | | | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2629 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

winstonhsu.uspto@gmail.com
Patent.admin.uspto.Rcv@naipo.com
mis.ap.uspto@naipo.com.tw

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/709,506 | | CHIEN ET AL. | |
| | Examiner | | Art Unit | |
| | Jeff Piziali | | 2629 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>26 July 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicants' cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Independent claim 1 recites the limitation "every frame period" in line 13 and the limitation "the connected data line" in line 17. There is insufficient antecedent basis for these limitations in the claim.

5. Moreover, claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are between the "plurality of frame data" (recited in

Art Unit: 2629

claim 1, line 10) and the "every frame period" (recited in claim 1, line 13). It would be unclear to one having ordinary skill in the art whether the claimed "frame data" and "frame period" refer to the same frame, or rather to two different and distinct frames.

6. Additionally, claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are between the "corresponding data line" (recited in claim 1, line 8) and the "connected data line" (recited in claim 1, line 17). It would be unclear to one having ordinary skill in the art whether the claimed "corresponding data line" and "connected data line" (connected to what?) refer to the same data line, or rather to two different and distinct data lines.

7. Independent claim 6 recites the limitation "a double-frequency clock signal" in line 12 and the limitation "a double-frequency synchronization signal" in line 14. There is insufficient antecedent basis for these limitations in the claim. In particular, there is no antecedent basis for any frequencies.

8. Moreover, claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are between the "plurality of frame data" (recited in

Art Unit: 2629

claim 1, line 11) and the "one frame period" (recited in claim 1, line 22). It would be unclear to one having ordinary skill in the art whether the claimed "frame data" and "frame period" refer to the same frame, or rather to two different and distinct frames.

9. Additionally, claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are between the "double-frequency clock signal" (recited in claim 6, line 12) and the "double-frequency synchronization signal" (recited in claim 6, line 14). It would be unclear to one having ordinary skill in the art whether the claimed clock and synchronization signals double the same frequency, or rather double two different and distinct frequencies.

10. Claims 2-5 and 7-12 are rejected under 35 U.S.C. 112, second paragraph, as being at least dependent upon rejected base claims.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2629

12. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Jinda et al* (*US 6,977,636 B2*) in view of *Ham et al* (*US 2004/0119730 A1*).

Regarding claim 1, Jinda discloses a method for driving a liquid crystal display panel [Fig. 8; 15], the method comprising: continuously receiving a plurality of frame data [Fig. 8; input image signal]; producing an over-drive data voltage pulse [Fig. 9; b₁] and an original data voltage pulse [Fig. 9; b₂] according to the frame data in every frame period [Fig. 9; vertical synchronization interval]; and sequentially providing the over-drive data voltage pulse and the original data voltage pulse to the liquid crystal element of the pixel in one frame period via a connected data line (see Column 7, Line 15 - Column 8, Line 42). Jinda does not expressly teach the structural details of the liquid crystal panel.

However, Ham does disclose a liquid crystal display panel [Fig. 5; 57] comprising: a plurality of scan lines [Fig. 5; 56]; a plurality of data lines [Fig. 5; 55]; and a plurality of pixels [Fig. 5; Clc], each pixel has a switching device [Fig. 5; TFT] and a liquid crystal element [Fig. 5; pixel electrode], and the switching device is connected to the corresponding scan line, the corresponding data line and the liquid crystal element (see Page 4, Paragraph 53 - Page 5, Paragraph 58).

Jinda and Ham are analogous art, because they are from the shared inventive field of driving liquid crystal display devices via over-drive pulses. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use Ham's liquid crystal display panel in place of Jinda's LCD panel, so as to make use of an active matrix LCD structure suitable for displaying moving images (see Ham: Page 1, Paragraph 5).

Regarding claim 2, Jinda discloses delaying the frame data to produce a plurality of corresponding delayed frame data; and deciding a value of the over-drive data voltage pulse by comparing a present frame data with the corresponding delayed frame data (see Column 8, Lines 8-42).

Regarding claim 3, Jinda discloses when comparing the present frame data with the corresponding delayed frame data, the value of the over-drive data voltage pulse is decided according to a predetermined table (see Column 7, Lines 15-63).

Regarding claim 4, Jinda discloses each frame data comprises a plurality of pixel data and each pixel data corresponds to one pixel (see Column 7, Lines 15-63).

Regarding claim 5, Jinda discloses enabling the over-drive data voltage pulse and the original data voltage pulse to be supplied to the liquid crystal element (see Column 7, Lines 15-63).

Furthermore, Ham discloses providing a scan voltage to the switching device via the corresponding scan line to enable voltage pulses to be supplied to the liquid crystal element (see Page 4, Paragraph 53 - Page 5, Paragraph 58).

Regarding claim 6, this claim is rejected by the reasoning applied in rejecting claim 1; furthermore; Jinda discloses receiving a clock signal [Fig. 9; vertical synchronization interval], a synchronization signal [Fig. 9; vertical synchronization interval], and a plurality of frame data

Art Unit: 2629

[Fig. 8; input image signal]; producing a double-frequency clock signal [Fig. 9; vertical synchronization interval / 2] in accordance with the clock signal, and producing a double-frequency synchronization signal [Fig. 9; vertical synchronization interval / 2] in accordance with the double-frequency clock signal and the synchronization signal; producing at least an over-drive data voltage pulse [Fig. 9; b₁] and an original data voltage pulse [Fig. 9; b₂] in accordance with the frame data; and sequentially providing the over-drive data voltage pulse and the original data voltage pulse to the liquid crystal element of the corresponding pixel in accordance with the double-frequency clock signal in one frame period (see Column 7, Line 15 - Column 8, Line 42).

Furthermore, Ham discloses providing a clock signal [Fig. 5; MCLK] and a synchronization signal [Fig. 5; H & V] (see Page 4, Paragraph 53 - Page 5, Paragraph 58).

Regarding claim 7, this claim is rejected by the reasoning applied in rejecting claim 2.

Regarding claim 8, this claim is rejected by the reasoning applied in rejecting claim 3.

Regarding claim 9, Jinda discloses the synchronization signal includes a horizontal synchronization signal [inherent to an LCD matrix display] and a vertical synchronization signal [Fig. 9; vertical synchronization interval] (see Column 7, Lines 15-63).

Furthermore, Ham discloses providing a horizontal synchronization signal [Fig. 5; H] and a vertical synchronization signal [Fig. 5; V] (see Page 4, Paragraph 53 - Page 5, Paragraph 58).

Art Unit: 2629

Regarding claim 10, Jinda discloses the double-frequency synchronization signal includes a horizontal double-frequency synchronization signal [inherent to an LCD matrix display] and a vertical double-frequency synchronization signal [Fig. 9; vertical synchronization interval] (see Column 7, Lines 15-63).

Furthermore, Ham discloses providing a horizontal synchronization signal [Fig. 5; H] and a vertical synchronization signal [Fig. 5; V] (see Page 4, Paragraph 53 - Page 5, Paragraph 58).

Regarding claim 11, this claim is rejected by the reasoning applied in rejecting claim 4.

Regarding claim 12, this claim is rejected by the reasoning applied in rejecting claim 5.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tsai et al (US 2004/0246224 A1), Ham (US 2004/0196229 A1), Shen et al (US 7,202,843 B2), Takako et al (US 7,145,535 B2), Chen et al (US 7,006,066 B2), Nakamura et al (US 6,980,191 B2), Lee (US 6,825,824 B2), Oda et al (US 6,825,821 B2), Sakashita (US 6,501,451 B1), Wakai et al (US 6,271,817 B1), Shimada et al (US 6,219,017 B1), Sawayama et al (US 5,640,259 A), and Mizukata et al (US 5,598,177 A) are cited to further evidence the state of the art pertaining to driving liquid crystal display panels.

Art Unit: 2629

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571) 272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeff Piziali
21 June 2007